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DICTIONARY FILE UPDATES:   18 SEP 2007  HIGHEST RN 947490-11-1

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=> d l75 ide can

L75  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2007 ACS on STN
RN   1314-36-9  REGISTRY
ED   Entered STN:  16 Nov 1984
CN   Yttrium oxide (Y2O3)  (CA INDEX NAME)
OTHER NAMES:
CN   BB
CN   BB (metal oxide)
CN   Diyttrium trioxide
CN   FCD-660-2
CN   Nanotek Y2O3
CN   PC-YH
CN   RU-PB
CN   SY
CN   SY (oxide)
CN   Y-F
CN   Y-F (metal oxide)
CN   YO 3-245
CN   Yttria
CN   Yttrium oxide
CN   Yttrium oxide (YO1.5)
CN   Yttrium sesquioxide
CN   Yttrium trioxide
CN   Yttrium(3+) oxide
CN   Yttrium(III) oxide
AR   11130-29-3
MF   O3 Y2
CI   COM, MAN
LC   STN Files:   AGRICOLA, ANABSTR, BIOSIS, CA, CAOLD, CAPLUS, CASREACT, CBNB,
       CHEMCATS, CHEMLIST, CIN, CSCHEM, CSNB, DETHERM*, HSDB*, IFICDB, IFIPAT,
       IFIUDB, IPA, MEDLINE, MSDS-OHS, PIRA, PROMT, RTECS*, TOXCENTER, TULSA,
       USPAT2, USPATFULL, USPATOLD, VTB
```

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        (*File contains numerically searchable property data)
    Other Sources:   DSL**, EINECS**, TSCA**
        (**Enter CHEMLIST File for up-to-date regulatory information)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

          42996 REFERENCES IN FILE CA (1907 TO DATE)
            999 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
          43107 REFERENCES IN FILE CAPLUS (1907 TO DATE)
             55 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE   1:  147:290779

REFERENCE   2:  147:290554

REFERENCE   3:  147:290552

REFERENCE   4:  147:290111

REFERENCE   5:  147:290096

REFERENCE   6:  147:289995

REFERENCE   7:  147:289882

REFERENCE   8:  147:289342

REFERENCE   9:  147:288968

REFERENCE  10:  147:287965


=> fil hcaplus
FILE 'HCAPLUS' ENTERED AT 15:45:58 ON 19 SEP 2007
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FILE LAST UPDATED: 18 Sep 2007  (20070918/ED)

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 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

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L73  ANSWER 1 OF 13  HCAPLUS  COPYRIGHT 2007 ACS on STN
AN   2007:391759  HCAPLUS  Full-text
TI   The effects of process parameters on mechanical property and visual aspect
     of plasma sprayed Y2O3 coating
AU   Seok, Hyun Kwang; Lee, Jae Gun; Baik, Kyeong Ho
CS   Advanced Metals Research Center(AMRC), Korea Institute of Science and
     Technology, Seoul, 136-791, S. Korea
SO   Materials Science Forum (2007), 539-543(Pt. 2, THERMEC 2006), 1212-1217
     CODEN: MSFOEP; ISSN: 0255-5476
PB   Trans Tech Publications Ltd.
DT   Journal
LA   English
AB   The effects of process parameters on the mech. property and visual aspect of
     Y2O3 coating formed by plasma spraying were investigated.  For the expts.,
     granular Y2O3 powders were plasma sprayed using plasma gun with external
     powder-feeding system. When an asym. spraying was introduced by one-side
     powder-feeding, bigger pores and more frequent black spots were found in the
     region formed in opposite side from powder feeding direction, where the
     droplets of relatively lower temperature and lower flying velocity impinged to
     form coating.  The optimum conditions for highest Vickers hardness were found
     to be different from those for white visual aspect of the Y2O3 coatings.
     Among the process parameters such as Ar flow rate, H2 flow rate, O2 contents,
     spraying distance, spraying distance was known to be most important for the
     formation of black spots in Y2O3 coating.  The black spots formed in Y2O3
     coating are thought to have relationship with the breakdown of stoichiometry
     between Y and O during plasma spraying.  Consequently, the processing route
     not to form black spots in Y2O3 coating is described.
CC   57 (Ceramics)
RETABLE
```

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Fauchais, P	2000	39	852	Int J Therm Sci	HCAPLUS
Jiansirisomboon, S	2003	23	961	J Euro Ceram Soc	HCAPLUS
Ross, P	1996			Taguchi Techniques f	
Sampath, S	2001	304-3	144	Materials Science an	
Vardelle, M	1996	68	1093	Pure & Appl Chem	HCAPLUS
Wuttiphan, S	1997	293	251	Thin Solid Films	HCAPLUS

```
L73  ANSWER 2 OF 13  HCAPLUS  COPYRIGHT 2007 ACS on STN
AN   2007:119376  HCAPLUS  Full-text
DN   146:154169
TI   Y2O3 thermal sprayed film coating
IN   Harada, Yoshio; Teratani, Takema
PA   Tocalo Co., Ltd., Japan
SO   PCT Int. Appl., 30pp.
     CODEN: PIXXD2
DT   Patent
LA   Japanese
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   WO 2007013184       A1     20070201   WO 2005-JP14356        20050729 <--
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ,
             LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA,
             NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,
             SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU,
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My Application

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              ZA, ZM, ZW
          RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
              IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,
              CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,
              GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
              KG, KZ, MD, RU, TJ, TM
     EP 1780298            A1    20070502    EP 2005-768739         20050729 <--
          R:  AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
              IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL,
              BA, HR, MK, YU
     US 2007026246         A1    20070201    US 2005-560522         20051213 <--
     KR 2007030718         A     20070316    KR 2006-701290         20060119 <--
PRAI WO 2005-JP14356       W     20050729  <--
```

AB The invention relates to a member comprising a **Y2O3 black** thermal **sprayed** film formed on a surface of a base material, and a member comprising a **Y2O3 black** thermal **sprayed** film coated on a surface of a base material through an undercoat or an intermediate layer. This film has good thermal properties and good damage resistance by virtue of increased hardness. The **Y2O3 black** thermal **sprayed** film is formed by subjecting a white **Y2O3** powder material to plasma **spraying** in a substantially oxygen-free inert gas atmospheric, or by forming a white thermal **sprayed** film of **Y2O3**, then exposing this film to an electron beam or a laser beam to heat melt at least a part of the white film, thereby smoothing the film surface and, at the same time, **blackening** the film.

CC 76-11 (Electric Phenomena)
Section cross-reference(s): 56, 73

ST **yttrium oxide** thermal plasma **spray** **black** film coating laser

IT **Coating process**
(**plasma spraying**; **Y2O3** thermal **sprayed** film coating)

IT **Coating process**
(**thermal spraying**; **Y2O3** thermal **sprayed** film coating)

IT **1314-36-9**, **Yttria**, uses 1344-28-1, **Aluminum oxide**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**Y2O3** thermal **sprayed** film coating)

IT **1314-36-9**, **Yttria**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**Y2O3** thermal **sprayed** film coating)

RN 1314-36-9 HCAPLUS
CN Yttrium oxide (Y2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
The Kansai Electric Pow	2004			JP 2004149915 A	HCAPLUS
Tocalo Co Ltd	2001			EP 1156130 A1	HCAPLUS
Tocalo Co Ltd	2001			WO 2001042526 A1	
Tocalo Co Ltd	2001			JP 2001164354 A	HCAPLUS
Tocalo Co Ltd	2001			KR 2002003367 A	
Tocalo Co Ltd	2001			US 2002177001 A1	HCAPLUS
Tocalo Co Ltd	2001			TW 486758 A	HCAPLUS
Tocalo Co Ltd	2005			JP 2005256098 A	HCAPLUS

L73 ANSWER 3 OF 13 HCAPLUS COPYRIGHT 2007 ACS on STN
AN **2006:949852** HCAPLUS Full-text
DN 145:325234

TI Black conductive compositions, black electrodes, and methods of forming thereof
IN Barker, Michael F.; Smith, Jerome David; Hayakawa, Keiichiro
PA E.I. Du Pont de Nemours and Company, USA
SO Eur. Pat. Appl., 27 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1701212	A2	20060913	EP 2006-251263	20060309
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
	US 2006202174	A1	20060914	US 2006-369551	20060307
	KR 2006099443	A	20060919	KR 2006-22434	20060309
	CN 1848303	A	20061018	CN 2006-10082026	20060309
	JP 2006321976	A	20061130	JP 2006-64796	20060309 <--
PRAI	US 2005-660013P	P	20050309		
	US 2006-369551	A	20060307		

AB The invention is directed to **black** conductive composition(s), **black** electrodes made from such compns. and methods of forming such electrodes. In particular, the invention is directed to flat panel display applications, including alternating-current display panel applications. Still further, the invention is directed to composition(s) utilizing conductive metal oxides selected from an oxide of two or more elements selected from Ba, Ru, Ca, Cu, Sr, Bi, Pb, and the rare earth metals and photocrosslinkable polymers. These compns. are particularly useful in making photo-imageable **black** electrodes for flat panel display applications.
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST **black** conductive compn electrode flat panel display
IT Electrodes
(**black** conductive compns., **black** electrodes for display device)
IT Films
(elec. conductive; **black** conductive compns., **black** electrodes for display device)
IT Electric conductors
(films; **black** conductive compns., **black** electrodes for display device)
IT Optical imaging devices
(flat panels; **black** conductive compns., **black** electrodes for)
IT 1303-86-2, Boron oxide, uses 1304-76-3, Bismuth oxide, uses 1305-78-8, Calcium oxide, uses 1314-13-2, Zinc oxide, uses 7429-90-5, **Aluminum**, uses 7631-86-9, Silica, uses 12009-17-5, Barium ruthenium oxide (BaRuO3) 12053-92-8, Copper lanthanum oxide (CuLa2O4) 12169-14-1, Ruthenium strontium oxide (RuSrO3) 12313-89-2, Calcium ruthenium oxide (CaRuO3) 25086-15-1, Carboset XPD1234 25086-89-9, Vinylacetate-vinylpyrrolidone copolymer 51183-88-1, Copper lanthanum strontium oxide (CuLaSrO4) 110778-78-4, Barium copper lanthanum oxide (BaCuLaO4) 111591-04-9, Barium copper neodymium oxide (Ba2Cu3NdO7) 112872-70-5, Barium copper **yttrium oxide** (Ba2Cu2YO7) 115866-34-7, Bismuth calcium copper strontium oxide (Bi2CaCu2Sr2O8) 121110-98-3, Copper neodymium strontium oxide (Cu3NdSr2O7)
RL: TEM (Technical or engineered material use); USES (Uses)
(**black** conductive compns., **black** electrodes for display device containing)

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L73  ANSWER 4 OF 13  HCAPLUS  COPYRIGHT 2007 ACS on STN
AN   2005:1023676  HCAPLUS  Full-text
DN   143:330566
TI   Black-colored sprayed yttria-coated parts
     having good wear resistance and their manufacture
IN   Harada, Yoshio; Teratani, Takema
PA   Tocalo Co., Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 14 pp.
     CODEN: JKXXAF                                       12/13/2005
DT   Patent
LA   Japanese
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.         DATE
     ---------------     ----   --------   --------------------    --------
PI   JP 2005256098        A     20050922   JP 2004-69925           20040312 <--In IDS/FI.PR
     JP 2006118053        A     20060511   JP 2005-362629          20051216 <--
PRAI JP 2004-69925        A3    20040312
AB   The Y2O3 coating is formed on a substrate surface, preferably via an undercoat
     and an interlayer.  The undercoat, having thickness 50-500 µm, may be made of
     Ni, Ni alloy, W , W alloy, Mo, Mo alloy, Ti,
     Ti alloy, Al, Al alloy, and/or Mg
     alloy.
IC   ICM  C23C0004-10
     ICS  C23C0004-18
CC   57-2 (Ceramics)
     Section cross-reference(s): 56
ST   black colored sprayed yttria coated part
     wear resistance
IT   Coating materials
        (abrasion-resistant; black-colored sprayed
        yttria-coated parts having good wear resistance and their
        manufacture)
IT   Ceramic coatings
        (black-colored sprayed yttria-coated
        parts having good wear resistance and their manufacture)
IT   Coating process
        (spray; black-colored sprayed
        yttria-coated parts having good wear resistance and their
        manufacture)
IT   Aluminum alloy, base
       Magnesium alloy, base
       Molybdenum alloy, base
       Nickel alloy, base
       Titanium alloy, base
       Tungsten alloy, base
     RL: TEM (Technical or engineered material use); USES (Uses)
        (undercoat; black-colored sprayed yttria
        -coated parts having good wear resistance and their manufacture)
IT   1314-36-9P, Yttria, preparation
     RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
     engineered material use); PREP (Preparation); USES (Uses)
        (black-colored sprayed yttria-coated
        parts having good wear resistance and their manufacture)
IT   7429-90-5, Aluminum, uses   7439-98-7, Molybdenum,
     uses   7440-02-0, Nickel, uses   7440-32-6, Titanium,
     uses   7440-33-7, Tungsten, uses
     RL: TEM (Technical or engineered material use); USES (Uses)
        (undercoat; black-colored sprayed yttria
        -coated parts having good wear resistance and their manufacture)
```

IT 1314-36-9P, **Yttria**, preparation
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**black**-colored **sprayed yttria**-coated parts having good wear resistance and their manufacture)
RN 1314-36-9 HCAPLUS
CN Yttrium oxide (Y2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L73 ANSWER 5 OF 13 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:59623 HCAPLUS Full-text
DN 140:115405
TI Rare-earth oxide powders modified for **dark** thermal-**spray** coating on articles
IN Maeda, Takao
PA Shin-Etsu Chemical Co., Ltd., Japan
SO U.S. Pat. Appl. Publ., 5 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004013911	A1	20040122	US 2003-618679	20030715 <--
	US 6852433	B2	20050208		
	JP 2004100039	A	20040402	JP 2003-190086	20030702 <--
PRAI	JP 2002-211400	A	20020719		

AB The white rare-earth oxide powders for thermal-**spray** coating on metal or ceramic articles are modified with minor C, **Ti**, or **Mo** to form the coating with **dark** gray or **black** color. The modified oxide powders contain 0.1-2% C, or 1-1000 ppm of **Ti** or **Mo.** The **Y2O3** powder was stirred in aqueous 30% sucrose for 10 min, filtered, dried, and fired at 1630° in flowing **Ar** for **darkening** with 1.0% of residual C. The **blackened** powder was used for plasma **spray** coating of **Al**-alloy substrate, forming **dark** coating 200 µm thick.T. The **dark** coating was stable in plasma-exposure test on Si substrate at 13.56 MHz and 1000 **W** in flowing CF4-O2 gas mixture
IC ICM B32B0009-00
INCL 428702000
CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): 57
ST rare earth oxide powder **darkening** thermal **spray** coating
IT Rare earth oxides
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(powder, **spray** coating with; white rare-earth oxide powders modified for **dark** or **black** thermal-**spray** coating)
IT **Coating process**
(**thermal spraying**, oxide, **darkening** of; white rare-earth oxide **powders** modified for **dark** or **black** thermal-**spray** coating)
IT **Aluminum** alloy, base
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(coating of; white rare-earth oxide powders modified for **dark** or **black** thermal-**spray** coating)
IT 57-50-1, Sucrose, uses 108-95-2, Phenol, uses
RL: MOA (Modifier or additive use); USES (Uses)

(C from fired, oxide powders **darkened** with; white rare-earth oxide powders modified for **dark** or **black** thermal-**spray** coating)

IT 10241-05-1, **Molybdenum** pentachloride
RL: MOA (Modifier or additive use); USES (Uses)
(**Mo** from fired, oxide powders **darkened** with; white rare-earth oxide powders modified for **dark** or **black** thermal-**spray** coating)

IT 7705-07-9, **Titanium** trichloride, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**Ti** from fired, oxide powders **darkened** with; white rare-earth oxide powders modified for **dark** or **black** thermal-**spray** coating)

IT 7439-98-7, **Molybdenum**, uses 7440-32-6, **Titanium**, uses 7440-44-0, Carbon, uses
RL: MOA (Modifier or additive use); USES (Uses)
(oxide powders with; white rare-earth oxide powders modified for **dark** or **black** thermal-**spray** coating)

IT **1314-36-9**, **Yttria**, uses 1314-37-0, Ytterbium oxide
RL: TEM (Technical or engineered material use); USES (Uses)
(powder, **darkening** of, for **spray** coating; white rare-earth oxide powders modified for **dark** or **black** thermal-**spray** coating)

IT **1314-36-9**, **Yttria**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(powder, **darkening** of, for **spray** coating; white rare-earth oxide powders modified for **dark** or **black** thermal-**spray** coating)

RN 1314-36-9 HCAPLUS
CN Yttrium oxide (Y2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	2001			JP 2001164354 A	HCAPLUS
Harada	2002			US 20020177001 A1	
Omori	1985			US 4502983 A	HCAPLUS
Oscarsson	1999			US 5993970 A	HCAPLUS
Sperlich	2000			US 6080232 A	HCAPLUS
Swiler	2003			US 6582814 B2	HCAPLUS
Takai	2002			U.S. Appl. No. 10101	
Takai	2002			U.S. Appl. No. 10173	
Takai	2002			U.S. Appl. No. 10173	

L73 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:39427 HCAPLUS Full-text
DN 128:105261
TI Thermal barrier coating experience in gas turbine engines at Pratt & Whitney
AU Bose, S.; DeMasi-Marcin, J.
CS Pratt and Whitney, East Hartford, CT, 06108, USA
SO Journal of Thermal Spray Technology (1997), 6(1), 99-104
CODEN: JTTEE5; ISSN: 1059-9630
PB ASM International
DT Journal
LA English
AB Pratt & Whitney has accumulated more than three decades of experience with thermal barrier coatings (TBCs). These coatings were originally developed to

reduce surface temps. of combustors of JT8D gas turbine engines to increase the thermal fatigue life of the components. Continual improvements in design, processing, and properties of TBCs have extended their applications to other turbine components, such as vanes, vane platforms, and blades, with attendant increases in performance and component durability. Plasma-**spray**-based generation I (Gen I) combustor TBCs with 7 weight% **yttria** partially stabilized zirconia deposited by air plasma **spray** (APS) on an APS NiCoCrAlY bond coat continues to perform extremely well in all product line engines. Durability of this TBC has been further improved in Gen II TBCs for vans by incorporating low-pressure chamber plasma-**sprayed** NiCoCrAlY has a bond coat. The modification has improved TBC durability by a factor of 2.5 and altered the failure mode for a "**black** failure" within the bond coat to a "white failure" within the ceramic. Further improvements have been accomplished by instituting a more strain-tolerant ceramic top layer with electron beam/phys. vapor deposition (EB-PVD) processing. This Gen III TBC has demonstrated exceptional performance on rotating airfoils in high-thrust-rated engines, improving blade durability by three times through elimination of blade creep, fracture, and rumpling of metallic coatings used for oxidation protection of the airfoil surfaces. A TBC durability model for plasma-**sprayed** as well as EB-PVD systems is proposed that involves the accumulation of compressive stresses during cyclic thermal exposure. The model attempts to correlate failure of the various TBCs with elements of their structure and its degradation with thermocyclic exposure.

CC 57-2 (Ceramics)
Section cross-reference(s): 56

IT **Coating process**
(**plasma spraying**; thermal barrier coating experience in gas turbine engines at Pratt & Whitney and durability model)

IT **Thermal barrier coatings**
Thermal cycling
Thermal fatigue
Turbines
(thermal barrier coating experience in gas turbine engines at Pratt & Whitney and durability model)

IT 1314-23-4P, Zirconia, preparation
RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses)
(**yttria**-stabilized, coatings; thermal barrier coating experience in gas turbine engines at Pratt & Whitney and durability model)

IT **1314-36-9P, Yttria**, preparation
RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses)
(zirconia stabilized by, coatings; thermal barrier coating experience in gas turbine engines at Pratt & Whitney and durability model)

IT **1314-36-9P, Yttria**, preparation
RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses)
(zirconia stabilized by, coatings; thermal barrier coating experience in gas turbine engines at Pratt & Whitney and durability model)

RN 1314-36-9 HCAPLUS
CN Yttrium oxide (Y2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Demasi, J	1989			Thermal Barrier Coat	

Meier, S	1994	116	250	J Eng Gas Turbines P	HCAPLUS
Miller, R	1982	95	265	Thin Solid Films	HCAPLUS

L73 ANSWER 7 OF 13 HCAPLUS COPYRIGHT 2007 ACS on STN
AN **1996:751071** HCAPLUS Full-text
DN 126:149486
TI Compatibility of **yttria** (Y2O3) with liquid lithium
AU Terai, T.; Yoneoka, T.; Tanaka, H.; Suzuki, A.; Tanaka, S.; Nakamichi, M.; Kawamura, H.; Miyajima, K.; **Harada, Y.**
CS Department of Quantum Engineering and Systems Science, University of Tokyo, 7-3-1, Hongo, Tokyo, 113, Japan
SO Journal of Nuclear Materials (1996), 233-237(Pt. B), 1421-1426
CODEN: JNUMAM; ISSN: 0022-3115
PB Elsevier
DT Journal
LA English
AB Compatibility of sintered specimens and plasma **sprayed** coating specimens of **Y2O3** with liquid Li was tested at 773 K. No configuration change was observed for the sintered specimens with a slight increase of thickness for 1419 h. Li-Y complex oxide (LiYO2) was formed on the surface, and the inner part changed to gray or **black** nonstoichiometric **Y2O3**-x with lower elec. resistivity. The plasma **sprayed** coating specimens were severely attacked by liquid Li with or without applied elec. field. Li penetrated into the coating layer through small cracks and reacted on **Y2O3** to form LiYO2, which has a different d. from **Y2O3** and is more brittle than **Y2O3**. **Y2O3** has a possibility as a ceramic coating material for liquid blankets if it can be made into a dense coating on the surface of piping materials.
CC 71-2 (Nuclear Technology)
ST compatibility **yttria** liq lithium liq blanket; fusion reactor blanket **yttria** compatibility
IT Fusion reactor blankets
(compatibility of **yttria** (Y2O3) with liquid lithium)
IT 12169-03-8, Lithium **yttrium oxide** (LiYO2)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(compatibility of **yttria** (Y2O3) with liquid lithium)
IT **1314-36-9, Yttrium oxide** (Y2O3), uses
RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(compatibility of **yttria** (Y2O3) with liquid lithium)
IT 7439-93-2, Lithium, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(compatibility of **yttria** (Y2O3) with liquid lithium)
IT **1314-36-9, Yttrium oxide** (Y2O3), uses
RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(compatibility of **yttria** (Y2O3) with liquid lithium)
RN 1314-36-9 HCAPLUS
CN Yttrium oxide (Y2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bauer, A	1974	1930		Battelle Mem Inst Re	
Borgstedt, H	1995	212-2	1501	J Nucl Mater	
Cairns, E	1971			ANL-7888	
Glasbrenner, H	1995	212-2	1561	J Nucl Mater	

Hartmanova, M	1989	36	137	Solid State Ionics	HCAPLUS
Hollenberg, G	1995	28	190	Fus Eng Des	HCAPLUS
Malang, S	1995	27	570	Fus Eng Des	HCAPLUS
Nakamichi, M	1995		1217	Proc SOFT-18	HCAPLUS
Perujo, A	1995	28	252	Fus Eng Des	HCAPLUS
Roth, R	1987	6	92	Phase Diagrams for C	
Tallen, N	1966	49	401	J Am Ceram Soc	
Terai, T	1995		1329	Proc SOFT-18	HCAPLUS
Tominetti, S	1990	176-1	672	J Nucl Mater	HCAPLUS
Yoneoka, T	1996	60	1	J Jpn Inst Metals	HCAPLUS
Yoneoka, T				J Jpn Inst Metals, t	

L73 ANSWER 8 OF 13 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1993:130509 HCAPLUS Full-text
DN 118:130509
TI Carbonyl metal-containing, diffuse, optically **black** plasma-**sprayed** coatings
IN Marousek, Michael E.; Nagle, Dennis C.; Shepard, Donald F.
PA Martin-Marietta Corp., USA
SO U.S., 4 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5176964	A	19930105	US 1991-685479	19910412 <--
PRAI	US 1991-685479		19910412		

AB The coatings have absorptivity .gtorsim.0.92 and emissivity .gtorsim.0.85, are obtained by plasma **spraying** substrates with a powder composition comprising approx. 20-50 weight% carbonyl metal and balance ceramic oxide. The substrates, preferably **Ti**-6Al-4V, may first be coated with a bonding layer by plasma **spraying** a NiCrAl alloy. The ceramic oxide is **Y2O3**-stabilized ZrO2, and the carbonyl metal is carbonyl iron. These coatings are stable in space environment, and have high absorptivity for solar energy and high **IR** emittance.
IC ICM B22F0003-00
ICS B32B0009-04
INCL 428552000
CC 57-2 (Ceramics)
Section cross-reference(s): 56
ST UV absorbing **IR** emitting coating; carbonyl iron powder zirconia coating; **yttria** stabilizer zirconia iron powder; plasma **spraying** coating substrate; **titanium aluminum** vanadium alloy substrate; bonding interlayer coating substrate; **nickel** chromium **aluminum** alloy interlayer; optical **black** coating space vehicle
IT Metals, uses
RL: USES (Uses)
(powdered, optically **black** coating materials containing ceramic oxide and, for space vehicles, for high absorptivity for solar energy and high **IR** emittance)
IT **Coating materials**
(optically **black**, coating with, of substrates, for space vehicles, for high absorptivity for solar energy and high **IR** emittance)
IT **Coating process**
(**plasma spraying**, of substrates, with optically **black** coating materials, for high absorptivity for solar energy and high **IR** emittance, for space vehicles)

IT Ceramic materials and wares
(powdered, oxides, optically **black** coating materials containing
metal powdered and, for space vehicles, for high absorptivity for solar
energy and high **IR** emittance)
IT 12743-70-3, **Ti**-6Al-4V
RL: USES (Uses)
(coating of, by plasma **spraying**, with ceramic oxide- and
metal powder-containing optically **black** coating materials, for
space vehicles, for high absorptivity for solar energy and high
IR emittance)
IT 55467-16-8, **Aluminum**, chromium, **nickel** base
RL: USES (Uses)
(powdered, coating with, by plasma **spraying**, of substrates for
bonding interlayer, in, optically **black** coating formation on
space vehicles, for high absorptivity for solar energy and high
IR emittance)
IT 7439-89-6P, Iron, preparation
RL: PREP (Preparation)
(powdered, optically **black** coating materials containing ceramic
oxide and, for space vehicles, for high absorptivity for solar energy
and high **IR** emittance)
IT 1314-23-4, Zirconia, uses
RL: USES (Uses)
(**yttria**-stabilized, optically **black** coating
materials containing metal powdered and, for space vehicles, for high
absorptivity for solar energy and high **IR** emittance)
IT **1314-36-9**, **Yttria**, uses
RL: USES (Uses)
(zirconia stabilized with, optically **black** coating materials
containing metal powdered and, for space vehicles, for high absorptivity
for
solar energy and high **IR** emittance)
IT **1314-36-9**, **Yttria**, uses
RL: USES (Uses)
(zirconia stabilized with, optically **black** coating materials
containing metal powdered and, for space vehicles, for high absorptivity
for
solar energy and high **IR** emittance)
RN 1314-36-9 HCAPLUS
CN Yttrium oxide (Y2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L73 ANSWER 9 OF 13 HCAPLUS COPYRIGHT 2007 ACS on STN
AN **1986:114196** HCAPLUS Full-text
DN 104:114196
TI Plasma **sprayed aluminum-yttria** containing
(1) iron-chromium and (2) **nickel**-chromium coatings with
excellent corrosion resistance and **sprayability** factors for use
in energy conversion systems
AU Harrington, John H.; Rangaswamy, Subramaniam
CS METCO, Westbury, NY, USA
SO Coat. Bimet. Aggressive Environ., Conf. Proc. (1985), Meeting Date 1984,
171-8. Editor(s): Sisson, Richard D., Jr. Publisher: ASM, Metals Park,
Ohio.
CODEN: 54WHAK
DT Conference
LA English
AB Fe-27Cr-9Al-2Y2O3 [100458-57-9] and **Ni**-18Cr-9Al-2%**Y2O3** [100458-56-8] coatings
formed by plasma **spraying** of composite powders exhibited excellent corrosion

resistance and improved **sprayability** and bonding over state-of-the-art coatings. The powders were formulated to utilize the **Al-Y2O3** alloying reactions in the plasma flame to provide superior corrosion resistance and **spraying** properties. The coatings were evaluated for high-temperature corrosion resistance to Na, S, Cl compds., and oxidation by using industrial screening tests. The Fe-base coatings had superior corrosion resistance in reducing atms. involving a dry char of Na2S-Na2CO3-NaCl at 850°F to simulate a **black** liquor recovery boiler. The **Ni**-base coating had superior corrosion resistance in oxidizing atms. in a laboratory molten salt crucible test involving Na2SO4-NaCl at 1380°F. The improved **sprayability** factors resulting from the composites are higher bond strengths, greater thickness limits, better bend ductility, and less **spray** technique dependence for on-site **spraying** applications.

CC 56-6 (Nonferrous Metals and Alloys)
ST **nickel** alloy coating boiler corrosion; iron alloy coating boiler corrosion; chromium addn plasma **sprayed** coating; **aluminum** addn plasma **sprayed** coating; **yttria** addn plasma **sprayed** coating
IT Boilers
(coatings for, plasma-**sprayed** corrosion-resistant)
IT **Coating materials**
(iron and **nickel** alloys, plasma-**sprayed** corrosion-resistant, for boilers)
IT 100458-56-8 100458-57-9
RL: USES (Uses)
(coatings of, plasma-**sprayed** corrosion-resistant, for boilers)

L73 ANSWER 10 OF 13 HCAPLUS COPYRIGHT 2007 ACS on STN
AN **1981:200209** HCAPLUS Full-text
DN 94:200209
TI Properties of **black yttrium oxide** sintered bodies
AU Tsukuda, Y.
CS Cent. Res. Lab., Hitachi Ltd., Kokubunji, 185, Japan
SO Materials Research Bulletin (1981), 16(4), 453-9
CODEN: MRBUAC; ISSN: 0025-5408
DT Journal
LA English
AB **Black Y2O3** pieces were obtained by heating in a reducing atmospheric, and they have some properties other types of **Y2O3** do not have. Hardness, transmittance, and thermoluminescence of **black Y2O3** sintered pieces were investigated. The Knoop hardness nos. of the **black Y2O3** pieces vary from 615 to 804 kg/mm2, and the average hardness number is 699 kg/mm2, which is nearly equal to that of a colorless piece. In-line transmittances of the **dark Y2O3** pieces in the 0.2 .apprx. 11 μm wavelength are lower than those of colorless pieces. The trap level of the **black Y2O3** pieces is 1.22 eV.
CC 73-3 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
ST **yttrium oxide black** optical property; Knoop hardness **black yttrium oxide**; thermoluminescence **black yttrium oxide**; luminescence **black yttrium oxide**; **IR** visible **black yttrium oxide**
IT Trapping and Traps
(in **yttrium oxide black** centered bodies)
IT Infrared spectra
Luminescence, thermo-
Ultraviolet and visible spectra
(of **yttrium oxide black** centered bodies)

IT 1314-36-9, properties
RL: PRP (Properties)
(Knoop hardness nos. and optical properties of **black** centered bodies of)
IT 1314-36-9, properties
RL: PRP (Properties)
(Knoop hardness nos. and optical properties of **black** centered bodies of)
RN 1314-36-9 HCAPLUS
CN Yttrium oxide (Y2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L73 ANSWER 11 OF 13 HCAPLUS COPYRIGHT 2007 ACS on STN
AN **1980:576190** HCAPLUS Full-text
DN 93:176190
TI Emissivity of **sprayed** layers of **yttrium oxide** and solid solutions of zirconium dioxide
AU Zhorov, G. A.; Zakharov, B. M.
CS Moscow, USSR
SO Teplofizika Vysokikh Temperatur (1980), 18(4), 745-51
CODEN: TVYTAP; ISSN: 0040-3644
DT Journal
LA Russian
AB The normal integral and semispherical degree of **blackness** was determined at 400-2500 K of layers of **Y2O3**, Zr, ZrO2-CaO, and ZrO2-CaO-SiO2 solid solns. The effect of vacuum depth on the emissivity of **spray** deposited layers at high temps. was studied.
CC 73-2 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
ST emissivity **yttria** zirconia solid soln
IT Emissivity
(of **yttria** and zirconia solid solns. **sprayed** layers)
IT 1305-78-8D, solid solns. with silica and zirconium dioxide 1314-23-4D, solid solns. with calcium oxide and silicon dioxide **1314-36-9**, properties 7440-67-7, properties 7631-86-9D, solid solns. with calcium oxide and zirconium oxide
RL: PRP (Properties)
(emissivity of plasma **sprayed** layers of)
IT **1314-36-9**, properties
RL: PRP (Properties)
(emissivity of plasma **sprayed** layers of)
RN 1314-36-9 HCAPLUS
CN Yttrium oxide (Y2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L73 ANSWER 12 OF 13 HCAPLUS COPYRIGHT 2007 ACS on STN
AN **1979:96568** HCAPLUS Full-text
DN 90:96568
TI High thermal emittance coating for x-ray targets
IN Hueschen, Robert E.; Jens, Richard A.
PA General Electric Co., USA
SO U.S., 7 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1
PATENT NO. KIND DATE APPLICATION NO. DATE

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PI	US 4132916	A	19790102	US 1977-769067	19770216
	DE 2805154	A1	19781123	DE 1978-2805154	19780208
	FR 2381834	A1	19780922	FR 1978-3942	19780213 <--
	FR 2381834	B1	19830805		
	JP 53108796	A	19780921	JP 1978-16005	19780216
PRAI	US 1977-769067	A	19770216		

AB A high thermal emittance coating for an x-ray tube anode target comprises a high m.p. oxide or a mixture of such oxides plus TiO2 and a stabilizer of CaO or **Y2O3**. The product results from heating at ≤10-5 torr and 1650-1900° a mixture of TiO2 2.5-20, an oxide (ZrO2, HfO, MgO, CeO2, La2O3, or SrO) 70-93.5 weight %, and a stabilizer of CaO or **Y2O3** balance. The coating is fused and bonded tightly to the target to minimize flaking off. For example, specific oxide coating compns. which produce a **black** fused coating with thermal emittance values of 0.92-0.94 include ZrO2 76, CaO 4, and TiO2 20 weight %; and ZrO2 87.88, CaO 4.62, and TiO2 7.5 weight %.

IC H01J0035-08
INCL 313330000
CC 76-14 (Electric Phenomena)
IT **Coating materials**
(oxide fused, with high thermal emittance, for x-ray tube anode target)

L73 ANSWER 13 OF 13 HCAPLUS COPYRIGHT 2007 ACS on STN
AN **1976:168583** HCAPLUS Full-text
DN 84:168583
TI Studies on sintering **yttrium oxide**
AU Tsukuda, Yasuo; Muta, Akinori
CS Cent. Res. Lab., Hitachi Ltd., Kokubunji, Japan
SO Yogyo Kyokaishi (1976), 84(3), 141-7
CODEN: YGKSA4; ISSN: 0009-0255
DT Journal
LA Japanese

AB **Y2O3** [**1314-36-9**] is chemical stable and one of the hopeful refractory materials. It is, however, difficult to obtain dense **Y2O3** pieces using an ordinary sintering method without any additives. The effect of sintering conditions, such as temperature, time, and atmospheric on sinterability of **Y2O3** were investigated. Total impurity of **Y2O3** was <0.1% and the average grain size of the powder was 4-6 μ. The compacting pressure was 0.17-17 tons/cm2. The green compacts were heated at 1700-2120° for 30-10/ min in a H or **Ar** atmospheric When the d. of green compacts was 2.0-2.7 g/cm3, the d. of sintered pieces in a H atmospheric increased with that of green compacts. The sintered pieces became **black** from the inside. In-line transmittance of the sintered pieces in a H increased with the grain size. Activation energy for the grain growth was 90 kcal/mole. The pieces sintered in an **Ar** atmospheric had a brown or **dark** surface layer where **Mo** was detected. A translucent **Y2O3** piece was obtained, which has in-line transmittance of 70% at 0.76 mm thickness in the visible range.

CC 57-5 (Ceramics)
ST **yttria** refractory sintering
IT Sintering
(of **yttrium oxide** refractory)
IT Refractories
(**yttrium oxide**, sintering of transluscent)
IT **1314-36-9**
RL: USES (Uses)
(refractories, sintering of tranluscent)
IT **1314-36-9**
RL: USES (Uses)
(refractories, sintering of tranluscent)
RN 1314-36-9 HCAPLUS

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CN   Yttrium oxide (Y2O3)  (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***


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FILE LAST UPDATED:                       14 SEP 2007   <20070914/UP>
MOST RECENT THOMSON SCIENTIFIC UPDATE:     200759      <200759/DW>
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L102 ANSWER 1 OF 4  WPIX COPYRIGHT 2007       THE THOMSON CORP on STN
AN   2007-271761 [26]    WPIX  Full-text
DNC  C2007-099112 [26]
DNN  N2007-202130 [26]
TI   Yttrium oxide sprayed film coated component used for
     heater pipe, consists of black sprayed coating of
     yttrium oxide provided on surface of base material
DC   L02; M13; P42; P73
IN   HARADA Y; TERATANI T
PA   (TOCA-N) TOCALO CO LTD
CYC  110
PIA  WO 2007013184    A1 20070201 (200726)* JA  30[1]
     US 20070026246   A1 20070201 (200726)  EN
     EP 1780298       A1 20070502 (200731)  EN
     KR 2007030718    A  20070316 (200755)  KO
ADT  WO 2007013184 A1 WO 2005-JP14356 20050729; EP 1780298 A1 EP
     2005-768739 20050729; US 20070026246 A1 WO 2005-JP14356
     20050729; EP 1780298 A1 WO 2005-JP14356 20050729; US
     20070026246 A1 US 2005-560522 20051213; KR 2007030718 A WO
     2005-JP14356 20050729; KR 2007030718 A KR 2006-701290 20060119
FDT  EP 1780298       A1 Based on WO 2007013184    A; KR 2007030718    A Based on
     WO 2007013184    A
PRAI WO 2005-JP14356       20050729
AB    WO 2007013184 A1   UPAB: 20070423
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NOVELTY - The **yttrium oxide** sprayed film coated component consists of **black** sprayed coating of **yttrium oxide** provided on the surface of a base material.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for manufacture of the **yttrium oxide** sprayed film coated component.
USE - For heater pipe and for infrared radiant section material.
ADVANTAGE - The **yttrium oxide** sprayed film coated component has excellent thermal radiation property and damage resistance. Since the spray coating of **yttria** becomes **black**, the contamination of the film is reduced and repeated washing of the film is eliminated. The **yttria** film has high hardness and improved wear resistance.

TECH

INORGANIC CHEMISTRY - Preferred Composition: The coated component further comprises undercoat containing metallic film, and topcoat. The metallic film contains nickel, tungsten, aluminum, molybdenum, titanium and/or magnesium, or their alloys. An intermediate layer containing alumina and/or **yttria** is further provided between the undercoat and topcoat.

L102 ANSWER 2 OF 4 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN **2006-336337** [35] WPIX Full-text
CR 2005-668927
DNC C2006-111154 [35]
DNN N2006-284610 [35]
TI Base material for semiconductor manufacturing apparatus coated with **yttrium oxide** by laser beam processing or electron beam processing **black** spray coating
DC L03; U11; X25
IN HARADA Y; TERATANI T
PA (TOCA-N) TOCALO CO LTD
CYC 1
PIA JP 2006118053 A 20060511 (200635)* JA 15[1]
ADT JP 2006118053 A Div Ex **JP 2004-69925 20040312**; JP 2006118053 A JP 2005-362629 20051216
PRAI JP 2005-362629 20051216
JP 2004-69925 20040312
AB JP 2006118053 A UPAB: 20060602
NOVELTY - The base material is coated with **yttrium oxide** by laser beam processing or electron beam processing **black** spray coating.
DETAILED DESCRIPTION - An undercoat which consists of metal film is provided between base material and **yttrium oxide** coating. The metallic film is chosen from nickel, tungsten, molybdenum, titanium, aluminum, magnesium or their alloy.
USE - For semiconductor manufacturing apparatus, also in baffle plate, focus ring, insulator ring, shielding ring, bellows cover, electrode and metal melt crucible.
ADVANTAGE - The base material has excellent thermal radiation property, damage resistance and contamination resistance.

L102 ANSWER 3 OF 4 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN **2005-668927** [69] WPIX Full-text
CR 2006-336337
DNC C2005-203346 [69]
DNN N2005-548045 [69]
TI **Yttrium-oxide** spray-coating covered component for baffle plate, has surface of base material covered with **black** -spray coating of **yttrium oxide**
DC M13; V05
IN HARADA Y; TERATANI T
PA (TOCA-N) TOCALO CO LTD

CYC 1
PIA JP 2005256098 A 20050922 (200569)* JA 14[1]
ADT JP 2005256098 A **JP 2004-69925 20040312**
PRAI **JP 2004-69925 20040312**
AB JP 2005256098 A UPAB: 20051223
NOVELTY - The **yttrium-oxide** spray-coating covered component has a surface of a base material covered with **black** -spray coating of **yttrium oxide.**
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for manufacture of the **yttrium-oxide** spray-coating covered component.
USE - For baffle plate, focus rings, insulator rings, shielding rings, bellow covers and electrodes.
ADVANTAGE - The **yttrium oxide** spray-coating covered component has excellent thermal-radiation property, thermal-shock resistance, damage resistance, adhesivity, glossiness, plasma-proof erosion property, alkali resistance, and working efficiency such as plasma-etching processing, and is manufactured economically with excellent production efficiency, without generation of crack.
TECH
INORGANIC CHEMISTRY - Preferred Component: The **yttrium-oxide** spray-coating covered component has a metallic film containing metal such as nickel, tungsten, molybdenum, titanium, aluminum, magnesium and/or their alloys as an undercoat, and an intermediate layer formed using solid solution containing alumina and/or **yttrium oxide.**
ORGANIC CHEMISTRY - Preferred Component: The **yttrium-oxide** spray-coating covered component has a metallic film containing metal such as nickel, tungsten, molybdenum, titanium, aluminum, magnesium and/or their alloys as an undercoat, and an intermediate layer formed using solid solution containing alumina and/or **yttrium oxide.**

L102 ANSWER 4 OF 4 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN **1990-299743** [40] WPIX Full-text
DNC C1990-129434 [21]
TI Metal oxide coating for ceramic oxide fibres - produced by reactive CVD in flow chamber to give material suitable for reinforcing metals or alloys
DC L02; M22
IN BOUIX J; HILLEL R
PA (CNRS-C) CNRS CENT NAT RECH SCI
CYC 1
PIA FR 2643088 A 19900817 (199040)* FR <--
ADT FR 2643088 A **FR 1989-2369 19890216**
PRAI **FR 1989-2369 19890216**
AB FR 2643088 A UPAB: 20050501
A coating suitable for ceramic oxides in fibres or in bulk is claimed in which the coating is a polyvalent metallic compound such as titanium oxide. The method claimed produces the 0.1 to 1.0 micron coating by reactive CVD in H2 with the metal halide in the vapour phase at greater than 500 deg.C. The metal halide is chosen from transition metals and semiconductors; the substrate is one of silica, alumina, mullite, magnesia, zirconia or **yttria**, and can be mono or multi filament, a mesh or in bulk. The coating claimed consists of two layers; the outer layer of e.g. TiOx where x is between 0.35 and 0.5, and the inner layer of a complex phase consisting of, for example, in the case of mullite, Ti, Al, Si, and oxygen. The substrate as filament is moved through the reactor at constant speed preferably in an atmosphere of HCl and Ar with the metal chloride, to produce an even **blackish** deposit.
ADVANTAGE - The fibre characteristics of tensile strength and brittleness are retained after coating. The deposit is adherent, continuous, and homogeneous; the reaction conditions can be altered to give slightly different products with good control. It is chemically compatible with many metals and matrices

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and is especially useful for coating Al2O3 fibres to reinforce Al, avoiding
the non-wetting behaviour of Al2O3 and the peeling of SiO2. Magnesium-
containing alloys can now be reinforced with the coated fibres as the
reactivity of the alloy with the fibre is eliminated. The fibres have the same
Young's modulus before and after treatment. The breaking stress of the coated
fibres of 1750 MPa is only slightly below the value for untreated fibres of
2000 MPa. @(18pp Dwg.No.0/2)


=> => d his

     (FILE 'HOME' ENTERED AT 14:52:01 ON 19 SEP 2007)
                SET COST OFF

     FILE 'REGISTRY' ENTERED AT 14:52:36 ON 19 SEP 2007
                E YTTRIUM OXIDE/CN
L1            2 S E3,E37
L2            1 S L1 AND 1/NC
L3            1 S L1 NOT L2
L4        43050 S (Y/ELS OR ?YTTRI?/CNS OR 7440-65-5/CRN) AND (O/ELS OR ?OXID?/
L5           94 S L4 AND 2/ELC.SUB
L6           80 S L5 NOT CCS/CI
L7           78 S L6 NOT L1
L8           71 S L7 NOT (PMS OR RIS)/CI
L9            7 S L8 NOT TIS/CI
                SEL RN 6 7
L10           2 S E1-E2
L11          64 S L8 NOT L9
L12          67 S L3,L10,L11

     FILE 'HCAPLUS' ENTERED AT 14:59:04 ON 19 SEP 2007
L13       43107 S L2

     FILE 'HCAPLUS' ENTERED AT 14:59:19 ON 19 SEP 2007
L14      113403 S Y2O3 OR YTTRIUM()(OXIDE OR SESQUIOXIDE OR TRIOXIDE OR 3 OXIDE
L15      114544 S L13,L14
L16       43362 S L12
L17      114625 S L15,L16
L18         725 S L17 AND ?BLACK?
L19         464 S L18 AND L13
L20         465 S L18 AND L16
L21         465 S L19,L20
L22           1 S US20070026246/PN OR (US2005-560522# OR WO2005-JP14356)/AP,PRN
                E HARADA/AU
                E HARADA Y/AU
L23         481 S E3,E4
                E HARADA YO/AU
L24           6 S E31
                E HARADA NAME/AU
L25          70 S E4
                E YOSHIO/AU
L26           3 S E3
L27           4 S E17
                E TERATANI/AU
                E TERATANI T/AU
L28          43 S E3,E7
                E TERATANI NAME/AU
                E TAKEMA/AU
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                  E TOCALO/AP,CS
                  E TOCALO/PA,CS
L29          340  S E3-E25
                  E TOCALO/CO
L30          338  S E4-E7
                  E E4+ALL
L31          378  S E2+RT
                  E TOYO CALORIZING/PA,CS
L32           17  S E5-E20
                  E NIPPON COATING/PA,CS
L33           24  S E5-E20
                  E JAPAN COATING/PA,CS
L34            8  S E5-E9
                  E HARADA/AU
                  E HARADA Y/AU
L35          481  S E3,E4
                  E HARADA YO/AU
L36          493  S E51
L37           73  S L17 AND L22-L36
L38            3  S L37 AND ?BLACK?
                  E COATING PROCESS/CT
L39           20  S L18 AND E3-E104
                  E E3+ALL
L40           28  S L18 AND E9+OLD,NT
                  E E40
L41           20  S L18 AND E3
                  E E3+ALL
L42           20  S L18 AND E2+OLD
L43           31  S L18 AND E2+NT
L44           14  S L18 AND B05D/IPC,IC,ICM,ICS
L45           13  S L18 AND C03C/IPC,IC,ICM,ICS
L46           14  S L18 AND C23C/IPC,IC,ICM,ICS
L47           41  S L18 AND COAT?/CW,CT
L48           21  S L18 AND COAT?/SC,SX
L49           26  S L18 AND ?SPRAY?
L50           15  S L49 AND L39-L48
L51           12  S L21 AND L50
L52           57  S L21 AND L39-L48
L53           12  S L52 AND ?SPRAY?
L54           12  S L51,L53
                  SEL AN 1 2 4 7 9 11 12
L55            5  S L54 NOT E1-E14
L56           45  S L52 NOT L54
L57           75  S L39-L52 NOT L54,L55
L58           30  S L57 NOT L56
                  SEL AN 1 4 16 26 27 28
L59            6  S L58 AND E15-E25
L60          260  S L17 AND ?DARK?
L61           91  S L60 AND L13,L16
L62           88  S L61 NOT L39-L59
                  SEL AN 75 79
L63            2  S L62 AND E26-E29
L64           13  S L38,L55,L59,L63
L65           13  S L64 AND L13-L64
L66            8  S L65 AND (AL OR NI OR W OR MO OR TI OR MG OR NICKEL OR TUNGSTE
L67           13  S L65,L66
                  E LASER BEAM IRRADIATION/CT
                  E ELECTRON BEAM IRRADIATION/CT
                  E E3+ALL
L68         5696  S E2
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                E LASER BEAM/CT
                E E6+ALL
                E E2+ALL
L69      126362 S E10+OLD,NT
L70      763778 S E7+NT
L71           0 S L67 AND L68-L70
L72           2 S L67 AND (IR OR ?RADIAT?)
L73          13 S L67,L72
                SEL HIT RN

     FILE 'REGISTRY' ENTERED AT 15:45:31 ON 19 SEP 2007
L74           1 S E1
L75           1 S L74 AND L1-L12

     FILE 'REGISTRY' ENTERED AT 15:45:52 ON 19 SEP 2007

     FILE 'HCAPLUS' ENTERED AT 15:45:58 ON 19 SEP 2007
L76        2790 S L2(L)PREP+NT/RL
L77        2804 S L12(L)PREP+NT/RL
L78        2804 S L76,L77
L79          23 S L78 AND ?BLACK?
L80           2 S L78 AND ?DARK?
L81          24 S L79,L80
L82          22 S L81 NOT L73

     FILE 'WPIX' ENTERED AT 15:50:04 ON 19 SEP 2007
L83          98 S (L02-G01C OR L02-G01C1)/MC
L84       12035 S L14
                E YTTRIUM OXIDE/CN
L85           1 S E3,E34
L86         794 S R03343/DCN
L87       12362 S L83,L84,L86
L88         433 S L87 AND B05D/IPC,IC,ICM,ICS
L89          47 S L87 AND B05D001-08/IPC,IC,ICM,ICS
L90          20 S L87 AND B05D001-02/IPC,IC,ICM,ICS
L91         450 S L87 AND C23C004/IPC,IC,ICM,ICS
L92         291 S L87 AND C23C004-10/IPC,IC,ICM,ICS
L93          79 S L87 AND L02-A06/MC
L94         199 S L87 AND ?BLACK?
L95          52 S L87 AND ?DARK?
L96         232 S L94,L95 AND (PD<=20050729 OR PRD<=20050729 OR AD<=20050729)
L97          17 S L96 AND L88-L93
L98          16 S L96 AND C03C/IPC,IC,ICM,ICS
L99          18 S L96 AND B32B/IPC,IC,ICM,ICS
L100         22 S L96 AND (L02-J OR L02-J01 OR M13-H04? OR M13-M OR L02-G OR L0
L101         65 S L97-L100
                SEL AN 1 5 10 54
L102          4 S L101 AND E1-E4

     FILE 'WPIX' ENTERED AT 16:03:09 ON 19 SEP 2007

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